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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,637	02/16/2005	Karsten Plamann	0380-FP6237341	2463

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EXAMINER	
TON, TRI T	
ART UNIT	**PAPER NUMBER**
2877	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/501,637	PLAMANN ET AL.	
	Examiner	Art Unit	
	Tri T. Ton	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 15 July 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 07/15/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 07/15/04 has been entered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Oath/Declaration

3. The Oath and Declaration filed on 02/16/2005 is acceptable.

Drawings

4. The drawings filed on 07/15/2004. These drawings are acceptable.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106)), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed. The practical application of the claimed invention cannot be realized until the information is conveyed to the user. For the results to be tangible, it would need to output to a user, be displayed to a user, stored for later use, or used in any tangible manner. Merely generating an optically section image of the specimen would not appear to be sufficient to constitute a tangible result, since the outcome of generating step has not been used in the disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. Therefore, the subject matter of the claims is not patent eligible.

Part b. *Practical Application the Produces a Useful, Concrete, and Tangible Result* under Section IV *Determine Whether the Claimed Invention Complies with the Subject Matter Eligibility Requirement of 35 U.S.C. Sec. 101,* sentence 3, in the OG Notice from 22 November 2005 states, "In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible, and concrete."

See OG Notices: 22 November 2005, "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility". MPEP 2106.

Web site http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 3-14 and 17-19 are rejected under 35 U.S.C. 102(b) as being teached by Greivenkamp, Jr. (U.S. Patent No. 4,794,550). Hereafter, "Greivenkamp".

Regarding Claim 1, Greivenkamp teaches illuminating the specimen with a temporally modulating, spatially periodic illumination pattern (column 1, lines 21-24 and lines 34-38); imaging said specimen on a conjugate image plane (column 1, lines 24-29); acquiring a plurality of signals at respective positions on said image plane (column 2, lines 3-9), each signal corresponding to the incident light intensity at that position and having an oscillatory component caused by the modulation of the illumination pattern (column 2, lines 22-27); and measuring a characteristic of the oscillatory component of each of the signals, whereby the measured characteristics when combined in their relative positions generate an optically sectioned image of the specimen (column 2, lines 3-9).

Regarding Claim 3, Greivenkamp teaches between the acquisition and measuring steps, of filtering each acquired signal to isolate the oscillatory component therefrom (column 2, lines 51-58).

Regarding Claim 4, Greivenkamp teaches the illumination pattern being a fringe pattern (column 2, lines 20-24).

Regarding Claim 5, Greivenkamp teaches the fringe pattern being an interference pattern (column 1, lines 64-68).

Regarding Claim 6, Greivenamp teaches the illumination pattern being modulated by moving the illumination pattern relative to the specimen object plane (column 4, lines 47-58).

Regarding Claim 7, Greivenamp teaches the illumination pattern being modulated to produce an illumination modulation frequency of at least 100 Hz (column 6, lines 20-23), (C/100 - C/1000 => 100< f < 1000).

Regarding Claim 8, Greivenamp teaches the incident light at the image plane comprising reflected or transmitted light (column 2, lines 12-14).

Regarding Claim 9, Greivenamp teaches the incident light at the image plane comprising light which being emitted by the specimen in response to the illumination pattern (column 1, lines 51-55, and lines 57-61).

Regarding Claim 10, Greivenamp teaches receiving data which comprising a plurality of signals previously acquired by performing the steps of (i) illuminating a specimen with a temporally modulating, spatially periodic illumination pattern (column 1, lines 21-24) and lines 34-38), (ii) imaging said specimen on a conjugate image plane (column 1, lines 24-29), and (iii) acquiring a plurality of signals at respective positions on said image plane (column 2, lines 3-9), each signal corresponding to the incident light intensity at that position and having an oscillatory component caused by the modulation of the illumination pattern (column 2, lines 22-27), and measuring a characteristic of the oscillatory component of each of the signals, whereby the measured characteristics when combined in their relative positions generate an optically sectioned image of the specimen (column 2, lines 3-9).

Regarding Claim 10, Greivenamp teaches illumination means for illuminating a specimen with a temporally modulating, spatially periodic illumination pattern (column 1, lines 21-24, and lines 34-38); imaging means for imaging said specimen on a conjugate image plane (column 1, lines 24-29); acquisition means for acquiring a plurality of signals at respective positions on said image plane (column 2, lines 3-9), each signal corresponding to the incident light intensity at that position and having an oscillatory component caused by the modulating illumination pattern (column 2, lines 22-27); and processor means for measuring a characteristic of the oscillatory

component of each of the signals, whereby the measured characteristics when combined in their relative positions generate an optically sectioned image of the specimen (column 2, lines 3-9).

Regarding Claim 12, Greivenamp teaches the processor means also filtering each acquired signal to isolate the oscillatory component therefrom before measuring the characteristic of the oscillatory component (column 2, lines 51-58).

Regarding Claim 13, Greivenamp teaches the illumination means modulating the illumination pattern to produce a predetermined modulation frequency (column 1, lines 64-68), (column 2, lines 1) and the processor means being adapted to filter the acquired signals at substantially the same frequency (column 2, lines 51-58.

Regarding Claim 14, Greivenamp teaches the illumination means comprises means for generating a spatially periodic interference illumination pattern (column 1, lines 64-68).

Regarding Claim 17, Greivenamp teaches the processor means comprising a plurality of signal processors for respectively measuring the characteristics of the oscillatory components of the acquired light signals (column 2, lines 3-9).

Regarding Claim 18, Greivenamp teaches illumination means modulates the illumination pattern so that the modulation frequency is at least 100 Hz (column 6, lines 20-23), (C/100 - C/1000 => 100< f < 1000).

Regarding Claim 19, Greivenamp teaches illumination means for illuminating a specimen with a temporally modulating, spatially periodic illumination pattern (column 1, lines 21-24, lines 34-38); acquisition means for acquiring a plurality of signals at respective positions on a conjugate image plane onto which the microscope images the specimen (column 2, lines 3-9), (column 1, lines 24-29), each signal corresponding to the incident light intensity at that position and having an oscillatory component caused by the modulating illumination pattern (column 2, lines 22-27), and processor means for measuring a characteristic of the oscillatory components of each of the signals, whereby the measured characteristics when combined in their relative positions generate an optically sectioned image of the specimen (column 2, lines 3-9).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp, Jr. (U.S. Patent No. 4,794,550) in view of Hutchin (U.S. Patent No. 4,584,484). Hereafter, "Greivenkamp" and "Hutchin".

Regarding Claim 2, Greivenkamp teaches all the limitations of claim 1 as stated above except for the measured characteristic being the amplitude of the oscillatory component. Hutchin teaches the measured characteristic being the amplitude of the oscillatory component (column 1, lines 12-15, lines 67-68), (column 2, lines 1-8). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Greivenkamp by adding the measured characteristic being the amplitude of the oscillatory component in order to carry out for producing data which employed in reconstructing an optical image of the sample.

11. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp, Jr. (U.S. Patent No. 4,794,550) in view of De Groot (U.S. Patent No. 5,598,265). Hereafter, "Greivenkamp" and "Groot".

Regarding Claim 15, Greivenkamp teaches all the limitations of claim 1 as stated above except for the acquisition means comprising an array of light detectors for respectively detecting the light intensities at the plurality of image plane positions. Hutchin teaches an array of light detectors for detecting the light intensities at the plurality of image plane positions (column 9, lines 14-23). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Greivenkamp by adding an array of light detectors for detecting the light intensities in order to using the result of the intensity variation as a function of scan position for generating the image for the specimen.

Regarding Claim 16, Greivenkamp teaches the array of light detectors is a two-dimensional array (Figure 4), (column 3, lines 4-7).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references of Greivenkamp, Jr. (U.S. Patent No. 4,794,550), Hutchin (U.S. Patent No. 4,584,484), and De Groot (U.S. Patent No. 5,598,265) teach of various features similar to the claimed invention.

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri T. Ton whose telephone number is (571) 272-9064. The examiner can normally be reached on 10:30am - 7:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 21, 2006
Examiner Tri Ton/SN

Hoa Pham
Primary Patent Examiner
Art Unit 2877
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